

**Abstract of Disclosure**

Systems and methodologies for programming a memory cell having a functional or selective conductive layer are provided. The functional zone can include active, and/or passive and/or barrier layers. The system includes a controller that can actively trace conditions associated with such programming. In one aspect of the present invention, by providing an external stimulus, an associated electrical or optical property associated with the memory cell is affected. Such property is then compared to a predetermined value to set/verify a programming state for the memory cell. The external stimulus can then be removed upon completion of the programming, or reduced to a verifying state to read information. The memory cell can include alternating layers of active, passive, diode, and barrier layers positioned between at least two electrodes